EXPERIMENTAL EYE RESEARCH

Editors-in-Chief
ENDRE A. BALAZS and K. E. EAKINS

Editors
F. Bettelheim
P. Bhattacherjee
A. Bill
L. Z. Bito
H. Bloemendal
A. I. Cohen
Y. Courtois
H. Davson
G. Duncan
J. Harding
H. J. Hoenders
J. Hollyfield
S. Iwata
B. Jacobsen
M. E. Langham
D. M. Maurice
R. H. Meyers-Elliot
P. J. O'Brien
J. Piatigorsky
Y. Pouliquen
H. Ripps
J. W. Rohen
A. Spector
R. Tripathi
J. A. Zadunaisky

VOLUME 39
1984

IODICAL
QP
-74
=9
IBRARY

ACADEMIC PRESS

London Orlando San Diego San Francisco New York
Toronto Montreal Sydney Tokyo São Paulo
A Subsidiary of Harcourt Brace Jovanovich, Publishers

Copyright © 1984 by Academic Press Inc. (London) Ltd.
ALL RIGHTS RESERVED

No part of this volume may be produced in any form, by photostat, microfilm, or any other means, without written permission from the publishers.

Printed in Great Britain

CONTENTS OF VOLUME 39

Number 1, July 1984

Caprioli, J., Sears, M. and Mead, A. Ocular Blood Flow in Phakic and Aphakic Monkey Eyes 1

Giblin, F. J., Hightower, K. R., Ragatzki, P. A. and Reddy, V. N. Calcium-Induced High Molecular Weight Proteins in the Intact Rabbit Lens 9

Wells, P. A. and Hazlett, L. D. Complex Carbohydrates at the Ocular Surface of the Mouse: An Ultrastructural and Cytochemical Analysis 19

Graw, J., Kratochvilova, J. and Summer, K-H. Genetical and Biochemical Studies of a Dominant Cataract Mutant in Mice 37

Caprioli, J. and Sears, M. Combined Effect of Forskolin and Acetazolamide on Intraocular Pressure and Aqueous Flow in Rabbit Eyes 47

Hentzen, P. C., Bessem, C. C., Sorgente, N. and Bekhor, I. Total Poly(A+)-Messenger RNA from Bovine Lens Cofractionates with Sucrose Purified Fiber Cell Plasma Membrane 51

Nishio, I., Weiss, J. N., Tanaka, T., Clark, J. I., Giblin, F. J. Reddy, V. N. and Benedek, G. B. In Vivo Observation of Lens Protein Diffusivity in Normal and X-Irradiated Rabbit Lenses 61

Pourcho, R. G., Goebel, D. J. and McReynolds, J. S. Autoradiographic Studies of [^{3}H]-Glycine, [^{3}H]-GABA, and [^{3}H]-Muscimol Uptake in the Mudpuppy Retina

Campbell, M. T. and McAvoy, J. W. Onset of Fibre Differentiation in Cultured Rat Lens Epithelium under the Influence of Neural Retina-Conditioned Medium 83

Dillon J., Castineiras, S. G., Santiago, M. A. and Spector, A. The Endopeptidase-Resistant Protein Fraction from Human Cataractous Lenses 95

Grubb, B. R. and Bentley, P. J. The Biology of Strontium: Interactions with the Mammalian Crystalline Lens 107

Jernigan, H. M., Jr. and Laranang, A. S. Metabolism of the α-Amino Nitrogen of Glutamine in Rat Lens 113

Announcement 123

Number 2, August 1984

Ulshafer, R. J., Allen, C., Dawson, W. W. and Wolf, E. D. Hereditary Retinal Degeneration in the Rhode Island Red Chicken. I. Histology and ERG 125

Schubert, H. D., Denlinger, J. L. and Balazs, E. A. Exogenous Na-Hyaluronate in the Anterior Chamber of the Owl Monkey and its Effect on the Intraocular Pressure 137

Fliesler, S. J., Tabor, G. A. and Hollyfield, J. G. Glycoprotein Synthesis in the Human Retina: Localization of the Lipid Intermediate Pathway 153

Bar-Llan, A. Diurnal and Seasonal Variations in Intraocular Pressure in the Rabbit 175

Sillman, A. J., Bolnick, D. A., Bosetti, J. B., Haynes, L. W. and Walter, A. E. The Effect of Lead on Photoreceptor Response Amplitude – Influence of the Light Stimulus 183

Koksma, J. M. A., Hoyng, P. F. J. and Willekens, B. W. Lens Deviations in Rabbit Offspring after Short-term Prenatal Exposure to Dexamethasone: A Light-Microscopic Study 195

Jiang, Q., Lim, R and Blodi, F. C. Dual Properties of Cultured Retinoblastoma Cells: Immunohistochemical Characterization of Neuronal and Glial Markers 207

Walton, J. and McAvoy, J. Sequential Structural Response of Lens Epithelium to Retina-Conditioned Medium 217

Sanyal, S. and Zeilmaker, G. H. Development and Degeneration of Retina in

rds Mutant Mice: Light and Electron Microscopic Observations in Experimental Chimaeras 231

Number 3, September 1984

Trope, G. E. and Rumley, A. G. Catecholamine Concentrations in Tears 247
Clasanti, B. K., Craig, C. R. and Allara, R. D. Intraocular Pressure, Ocular Toxicity and Neurotoxicity after Administration of Cannabinol or Cannabigerol 251
Williams, R. N., Paterson, C. A., Eakins, K. E. and Bhattacherjee, P. Ascorbic Acid Inhibits the Activity of Polymorphonuclear Leukocytes in Inflamed Ocular Tissues 261
Kenney, M. C., Labermeier, U., Hinds, D. and Waring, G. O., III. Characterization of the Descemet's Membrane/Posterior Collagenous Layer Isolated from Fuchs' Endothelial Dystrophy Corneas 267
de Couet, H. G. Complex Glycoproteins Associated with the Detergent-resistant Membrane Matrix of the Rhabdomeral Microvilli of Crayfish Photoreceptors 279
Campochiaro, P., Ferkany, J. W. and Coyle, J. T. The Dissociation of Evoked Release of [^{3}H]-GABA and of Endogenous GABA from Chick Retina In Vitro 299
Stewart, A. and Augusteyn, R. C. Pyridine Nucleotides in Normal and Cataractous Human Lenses 307
Bhat, S. P. and Spector, A. A Simple Method to Characterize γ-Crystallin Synthesized In Vitro 317
Peress, N. S., Medeiros-Roxburgh, V. A. and Gelfand, M. C. Ontogeny and Localization of the IgG Fe Receptor of Rabbit Ciliary Processes 325
Baum, J. P., Maurice, D. M. and McCarey, B. E. The Active and Passive Transport of Water Across the Corneal Endothelium 335
Latta, K and Augusteyn, R. C. The Purification and Properties of Human Lens Glutathione Reductase 343
Cheng, H.-M., von Saltza, I., González, R. G., Ansari, N. H. and Srivastiva, S. K. Effect of Glutathione Deprivation on Lens Metabolism 355
Zhang, S. Q., Terenghi, G., Unger, W. G., Ennis, K. W. and Polak, J. Changes in Substance P- and Neuropeptide Y-Immunoreactive Fibres in Rat and Guinea-pig Irides following Unilateral Sympathectomy 365
Jacobson, B. Degradation of Glycosaminoglycans by Extracts of Calf Vitreous Hyalocytes 373
Letter to the Editors
Stone, R. A., Kuwayama, Y., Laties, A. M., McGlinn, A. M. and Schmidt, M. L. Guinea-pig Ocular Nerves Contain a Peptide of the Cholecystokinin/Gastrin Family 387

Number 4, October 1984

Basu, P. K., Matuk, Y., Kapur, B. M., Avaria, M., Jankie, R. and Carré, F. Should Corneas from Donors Receiving a High Dose of Salicylate be Used as Grafts: An Animal Experimentation 393
Latker, C. H. and Beebe, D. C. Development Changes in the Blood/Ocular Barriers in Chicken Embryos 401
Pal, J. K. and Modak, S. P. Immunochemical Characterization and Quantitative Distribution of Crystallins in the Epithelium and Differentiating Fibre Cell Populations of Chick Embryonic Lens 415
Sperber, G. O. and Bill, A. A Method for Near-continuous Determination of Aqueous Humor Flow; Effects of Anaesthetics, Temperature and Indomethacin 435
Schleich, T., Willis, J. A. and Matson, G. B. Longitudinal (T1) Relaxation Times of Phosphorus Metabolites in the Bovine and Rabbit Lens 455
Chen, C.-H. and Chen, S. C. Mediation of Vascular Endothelial Proliferation by Factors in Fetal Bovine Retinal Extracts and Serum 469

Sredy, J. and Spector, A. Phosphorylation of H_2O_2-Treated Lens Na^+,K^+-ATPase 479
Rao, G. N. and Cotlier, E. Urea Cycle Enzymes in Retina, Ciliary Body–Iris, Lens and Senile Cataracts 483
Ikebe, H., Takamatsu, T., Itoi, M. and Fujita, S. Cytofluorometric Nuclear DNA Determinations on Human Corneal Endothelial Cells 497
Grierson, I., Howes, R. C. and Wang, Q. Age-related Changes in the Canal of Schlemm 505
Tréton, J. A., Jones, R. E., King, C. R. and Piatigorsky, J. Evidence Against γ-Crystallin DNA or RNA Sequences in the Chicken 513
Butler, J. M., Ruskell, G. L., the late Cole, D. F., Unger, W. G., Zhang, S. Q., Blank, M. A., McGregor, G. P. and Bloom, S. R. Effects of VIIth (Facial) Nerve Degeneration on Vasoactive Intestinal Polypeptide and Substance P Levels in Ocular and Orbital Tissues of the Rabbit 523

Number 5, November 1984

Keeley, F. W., Morin, J. D. and Vesely, S. Characterization of Collagen from Normal Human Sclera 533
Fleshman, K. R. and Wagner, B. J. Changes During Aging in Rat Lens Endopeptidase Activity 543
González, R. G., Barnett, P., Cheng, H.-M. and Chylack, L. T., Jr Altered Phosphate Metabolism in the Intact Lens under High Glucose Conditions and its Prevention by an Aldose Reductase Inhibitor 553
Rogers, J. M. and Grabowski, G. T. Postnatal Mirex Cataractogenesis in Rats: Lens Cation Balance, Growth and Histology 563
Gudmundsson, O. G., Cohen, E. J., Greiner, J., Taubman, M. A. and Allansmith, M. R. Mononuclear and IgA-containing Cells in the Lacrimal Gland of Germ-free and Conventional Rats 575
Fei, P. F., Yue, B. Y. J. T. and Tso, M. O. M. Effects of Chondroitin Sulfate on Trabecular Meshwork in Rabbit Eyes: an Electron Microscopic Study 583
Terubayashi, H., Murabe, Y., Fujisawa, H., Itoi, M. and Ibata, Y. Enzymhistochemical Identification of Microglial Cells in the Rat Retina: Light and Electron Microscopic Studies 595
Davies, P. D., Duncan, G., Pynsent, P. B., Arber, D. L. and Lucas, V. A. Aqueous Humour Glucose Concentration in Cataract Patients and its Effect on the Lens 605
Clark, V. M., Hall, M. O., Mayerson, P. L. and Schechter, C. Identification of Some Plasma Membrane Proteins of Cultured Rat Pigment Epithelial Cells by Labeling with ^{125}I 611
Lythgoe, J. N. and Shand, J. Dark-induced Cone Outer Segment Damage in the Neon Tetra (*Paracheirodon innesi*) 629
Lee, R. E. and Davison, P. F. The Collagens of the Developing Bovine Cornea 639
Sredy, J. and Spector, A. The Phosphorylation of Bovine and Human Lens Polypeptides 653
Cousins, S. W., Guss, R. B., Howes, E. L., Jr and Rosenbaum, J. T. Endotoxin-induced Uveitis in the Rat: Observations on Altered Vascular Permeability, Clinical Findings, and Histology 665

Number 6, December 1984

Professor David Cole ii
Unger, W. G. and Tighe, J. The Response of the Isolated Iris Sphincter Muscle of Various Mammalian Species of Substance P 677
Sherrard, E. S. Interpretation of some Specular Microscopical Images of Insulted Corneal Endothelium by Scanning Electron Microscopy 685
Paterson, C. A., Williams, R. N. and Parker, A. V. Characteristics of Poly-

morphonuclear Leukocyte Infiltration into the Alkali Burned Eye and the Influence of Sodium Citrate 701
Butler, J. M., Raviola, G., Beers, G. J. and Carter, A. P. Computed Tomography of Aqueous Humour Outflow Pathways 709
Williams, R. N. and Bhattacherjee, P. Inhibition of the Acute Ocular Responses to Nitrogen Mustard by Colchicine 721
Tripathi, B. J. and Tripathi, R. C. Effect of Epinephrine In Vitro on the Morphology, Phagocytosis, and Mitotic Activity of Human Trabecular Endothelium 731
Burstein, N. L., Sears, M. L. and Mead, A. Aqueous Flow in Human Eyes is Reduced to Forskolin, a Potent Adenylate Cyclase Activator 745
Riley, M. V. A Role for Glutathione and Glutathione Reductase in Control of Corneal Hydration 751
Mittag, T. Role of Oxygen Radicals in Ocular Inflammation and Cellular Damage 759
Burstein, N. L., Fischbarg, J., Liebovitch, L. and the late Cole, D. F. Electrical Potential, Resistance, and Fluid Secretion across Isolated Ciliary Body 771
Langham, M. E. The Intraocular Pressure and the Pupillary Responses of Conscious Rabbits to Racemic *Erythro*-α-methylnorepinephrine 781
Johnson, F. and Maurice, D. A Simple Method of Measuring Aqueous Humor Flow with Intravitreal Fluoresceinated Dextrans 791
Bito, L. Z. Species Differences in the Responses of the Eye to Irritation and Trauma: a Hypothesis of Divergence in Ocular Defense Mechanisms, and the Choice of Experimental Animals for Eye Research 807

AUTHOR INDEX

Allansmith, M. R. (see Gudmundsson, O. G.), 575
Allara, R. D. (see Colasanti, B. K.), 251
Allen, C. (see Ulshafer, R. J.), 125
Ansari, N. H. (see Cheng, H-M.), 355
Arber, D. L. (see Davies, P. D.), 605
Augusteyn, R. C. (see Latta, K.), 343
Augusteyn, R. C. (see Stewart, A.), 307
Avaria, M. (see Basu, P. K.), 393

Balazs, E. A. (see Schubert, H. D.), 137
Bar-Ilan, A., Diurnal and seasonal variations in intraocular pressure in the rabbit, 175
Barnett, P. (see González, R. G.), 553
Basu, P. K., Matuk, Y., Kapur, B. M., Avaria, M., Jankie, R. and Carré, F., Should corneas from donors receiving a high dose of salicylate be used as grafts: an animal experimentation, 393
Baum, J. P., Maurice, D. M. and McCarey, B. E., The active and passive transport of water across the corneal endothelium, 335
Beebe, D. C. (see Latker, C. H.), 401
Beers, G. J. (see Butler, J. M.), 709
Bekhor, I. see Hetzen, P. C.), 51
Benedek, G. B. (see Nishio, I.), 61
Bentley, P. J. (see Grubb, B. R.), 107
Bessem, C. C. (see Hentzen, P. C.), 51
Bhat, S. P. and Sepctor, A., A simple method to characterize γ-crystallin synthesized in vitro, 317
Bhattacherjee, P. (see Williams, R. N.), 261, 721
Bill, A. (see Sperber, G. O.), 435
Bito, L. Z., Species differences in the responses of the eye to irritation and trauma: a hypothesis of divergence in ocular defense mechanisms, and choice of experimental animals for eye research, 807
Blank, M. A. (see Butler, J. M.), 523
Blodi, F. C. (see Jiang, Q.), 207
Bloom, S. R. (see Butler, J. M.), 523
Bolnick, D. A. (see Sillman, A. J.), 183
Bosettii, J. B. (see Sillman, A. J.), 183
Burstein, N. L., Sears, M. L. and Mead, A., Aqueous flow in human eyes is reduced by forskolin, a potent adenylate cyclase activator, 745
Burstein, N. L., Fischbarg, J., Liebovitch, L. and Cole, D. F., Electrical potential, resistance, and fluid secretion across isolated ciliary body, 771
Butler, J. M., Raviola, G., Beers, G. J. and Carter, A. P., Computed tomography of aqueous humour outflow pathways, 709
Butler, J. M., Ruskell, G. L., Cole, D. F., Unger, W. G., Zhang, S. Q., Blank, M. A., McGregor, G. P. and Bloom, S. R., Effects of VIIth (facial) nerve degeneration on vasocative intestinal polypeptide and substance P levels in ocular and orbital tissues of the rabbit, 523

Campbell, M. T. and McAvoy, J. W., Onset of fibre differentiation in cultured rat lens epithelium under the influence of neural retina-conditioned medium, 83
Campochiaro, P., Ferkany, J. W. and Coyle, J. T., The dissociation of evoked release of [^{3}H]-GABA and of endogenous GABA from chick retina in vitro, 299
Caprioli, J. and Sears, M., Combined effect of forskolin and acetazolamide on intraocular pressure and aqueous flow in rabbit eyes, 47
Caprioli, J., Sears, M. and Mead, A., Ocular blood flow in phakic and aphakic monkey eyes, 1
Carré, F. (see Basu, P. K.), 393
Carter, A. P. (see Butler, J. M.), 709
Castineiras, S. G. (see Dillon, J.), 95
Chen, C-H. and Chen, S. C., Mediation of vascular endothelial proliferation by factors in fetal bovine retinal extracts and serum, 469
Chen, S. C. (see Chen, C-H.), 469
Cheng, H-M., Saltza, I. von, González, R. G., Ansari, N. H. and Srivastiva, S. K., Effect of glutathione deprivation on lens metabolism, 355

Cheng, H-M. (see González, R. G.), 553
Chylack, L. T., Jr (see González, R. G.), 553
Clark, J. I. (see Nishio, I.), 61
Clark, V. M., Hall, M. O., Mayerson, P. L. and Schechter, C., Identification of some plasma membrane proteins of cultured rat pigment epithelial cells by labeling with ^{125}I, 661
Cohen, E. J. (see Gudmundsson, O. G.), 575
Colasanti, B. K., Craig, C. R. and Allara, R. D., Intraocular pressure, ocular toxicity and neurotoxicity after administration of cannabinol or cannabigerol, 251
Cole, D. F. (see Burstein, N. L.), 771
Cole, D. F. (see Butler, J. M.), 523
Cotlier, E. (see Rao, G. N.), 483
Cousins, S. W., Guss, R. B., Howes, E. L., Jr and Rosenbaum, J. T., Endotoxin-induced uveitis in the rat: observations on altered vascular permeability, clinical findings, and histology, 665
Coyle, J. T. (see Campochiaro, P.), 299
Craig, C. R. (see Colasanti, B. K.), 251

Davies, P. D., Duncan, G., Pynsent, P. B., Arber, D. L. and Lucas, V. A., Aqueous humour glucose concentration in cataract patients and its effect on the lens, 605
Davison, P. F. (see Lee, R. E.), 639
Dawson, W. W. (see Ulshafer, R. J.), 125
De Couet, H. G., Complex glycoproteins associated with the detergent-resistant membrane matrix of the rhabdomeral microvilli of crayfish photoreceptors, 279
Denlinger, J. L. (see Schubert, H. D.), 137
Dillon, J., Castineiras, S. G., Santiago, M. A. and Spector, A., The endopeptidase-resistant protein fraction from human cataractous lenses, 95
Duncan, G. (see Davies, P. D.), 605

Eakons, K. E. (see Williams, R. N.), 261
Ennis, K. W. (see Zhang, S. Q.), 365

Fei, P. F., Yue, B. Y. J. T. and Tso, M. O. M., Effects of chondroitin sulfate on trabecular meshwork in rabbit eyes: an electron microscopic study, 583
Ferkany, J. W. (see Campochiaro, P.), 299
Fishchbarg, J. (see Burstein, N. L.), 771
Fleshman, K. R. and Wagner, B. J., Changes during aging in rat lens endopeotidase activity, 543
Flieshler, S. J., Tabor, G. A. and Hollyfield, J. G., Glycoprotein syntheis in the human retina: localization of the lipid intermediate pathway, 153
Fujisawa, H. (see Terubayashi, H.), 595
Fujita, S. (see Ikebe, H.), 497

Gelfand, M. C. (see Peress, N. S.), 325
Giblin, F. J., Hightower, K. R., Ragatzki, P. A. and Reddy, V. N., Calcium-induced high molecular weight proteins in the intact rabbit lens, 9
Giblin, J. J. (see Nishio, I.), 61
Goebel, D. J. (see Pourcho, R. G.), 69
González, R. G., Barnett, P., Cheng, H-M. and Chylack, L. T., Jr, Altered phosphate metabolism in the intact rabbit lens under high glucose conditions and its prevention by a aldose reductase inhibitor, 553
González, R. G. (see Cheng, H-M.), 355
Grabowski, C. T. (see Rogers, J. M.), 563
Graw, J., Kratochvilova, J. and Summer, K-H., Genetics and biochemical studies of a dominant cataract mutant in mice, 37
Greiner, J. V. (see Gudmundsson, O. G.), 575
Grierson, I., Howes, R. C. and Wang, Q., Age-related changes in the canal of Schlemm, 505
Grubb, B. R. and Bentley, P. J., The biology of strontium: interactions with the mammalian crystalline lens, 107
Gudmundsson, O. G., Cohen, E. J., Greiner, J. V., Taubman, M. A. and Allansmith, M. R., Mononuclear and IgA-containing cells in the lacrimal gland of germ-free and conventional rats, 575
Guss, R. B. (see Cousins, S. W.), 665

Hall, M. O. (see Clark, V. M.), 611
Haynes, L. W. (see Sillman, A. J.), 183

Hazlett, L. D. (see Wells, P. A.), 19
Hentzen, P. C., Bessem, C. C., Sorgente, N. and Bekhor, I., Total poly(A+)-messenger RNA from bovine lens cofractionates with sucrose purified fiber cell plasma membrane, 51
Hightower, K. R. (see Giblin, F. J.), 9
Hinds, D. (see Kenney, M. C.), 267
Hollyfield, J. G. (see Fliesler, S. J.), 153
Howes, E. L., Jr (see Cousins, S. W.), 665
Howes, R. C. (see Grierson, I.), 505
Hoyng, P. F. J. (see Koksma, J. M. A.), 195

Ibata, Y. (see Terubayashi, H.), 595
Ikebe, H., Takamatsu, T. Itoi, M. and Fujita, S., Cytofluorometric nuclear DNA determinations on human corneal endothelial cells, 497
Itoï, M. (see Terubayashi, H.), 595

Jakobson, B., Degradation of glycosaminoglycans by extracts of calf vitreous hyalocytes, 373
Jankie, R. (see Basu, P. K.), 393
Jernigan, H. M. Jr and Laranang, A. S., Metabolism of the α-amino nitrogen of glutamine in rat lens, 113
Jiang, Q., Lim, R. and Blodi, F. C., Dual properties of cultured retinoblastoma cells: immunohistochemical characterization of neuronal and glial markers, 207
Johnson, F. and Maurice, D., A simple method of measuring aqueous humor flow with intravitreal fluoresceinated dextrans, 791
Jones, R. E. (see Tréton, J. A.), 513

Kapur, B. M. (see Basu, P. K.), 393
Keeley, F. W., Morin, J. D. and Vesely, S., Characterization of collagen from normal human sclera, 533
Kenney, M. C., Labermeier, U., Hinds, D. and Waring, G. O., II, Characterization of the Descemet's membrane/posterior collagenous layer isolated from Fuchs' endothelial dystrophy corneas, 267
King, C. R. (see Tréton, J. A.), 513
Koksma, J. M. A., Hoyng, P. F. J and Willekens, B. W., Lens deviations in rabbit offspring after short-term prenatal exposure to dexamethasone: a light-microscopic study, 195
Kratochvilova, J. (see Graw, J.), 37

Kuwayama, Y. (see Stone, R. A.), 387

Labermeier, U. (see Kenney, M. C.), 267
Langham, M. E., The intraocular pressure and the pupillary responses of conscious rabbits to racemic *erythro*-α-methylnorepinephrine, 781
Laranang, A. S. (see Jernigan, H. M., Jr), 113
Laties, A. M. (see Stone, R. A.), 387
Latker, C. H and Beebe, D. C., Developmental changes in the blood-ocular barriers in chicken embryos, 401
Latta, K. and Augusteyn, R. C., The purification and properties of human lens glutathione reductase, 343
Lee, R. E. and Davison, P. F., The collagens of the developing bovine cornea, 639
Liebovitch, L. (see Burstein, N. L.), 771
Lim, R. (see Jiang, Q.), 207
Lucas, V. A. (see Davies, P. D.), 605
Lythgoe, J. N. and Shand, J., Dark-induced cone outer segment damage in the neon tetra (*Paracheirodon innesi*), 629

McAvoy, J. (see Walton, J.), 217
McAvoy, J. W. (see Campbell, M. T.), 83
McCarey, B. E. (see Baum, J. P.), 335
McGlinn, A. M. (see Stone, R. A.), 387
McGregor, G. P. (see Butler, J. M.), 523
McReynolds, J. S. (see Pourcho, R. G.), 69
Matson, G. B. (see Schleich, T.), 455
Matuk, Y. (see Basu, P. K.), 393
Maurice, D. (see Johnson, F.), 791
Maurice, D. M. (see Baum, J. P.), 335

Mayerson, P. L. (see Clark, V. M.), 611
Mead, A. (see Burstein, N. L.), 745
Mead, A. (see Caprioli, J.), 1
Medeiros-Roxburgh, V. A. (see Peress, N. S.), 325
Mittag, T., Role of oxygen radicals in ocular inflammation and cellular damage, 759
Modak, S. P. (see Pal, J. K.), 415
Morin, J. D. (see Keeley, F. W.), 533
Murabe, Y. (see Terubayashi, H.), 595

Nishio, I., Weiss, J. N., Tanaka, T., Clark, J. I., Giblin, F. J., Reddy, V. N. and Benedek, G. B., In vivo observation of lens protein diffusivity in normal and X-irradiated rabbit lenses, 61

Pal, J. K. and Modak, S. P., Immunochemical characterization and quantitative distribution of crystallins in the epithelium and differentiating fibre cell populations of chick embryonic lens, 415
Parker, A. V. (see Paterson, C. A.), 701
Paterson, C. A., Williams, R. N. and Parker, A. V., Characteristics of polymorphonuclear leukocyte infiltration into the alkali burned eye and the influence of sodium citrate, 701
Paterson, C. A. (see Williams, R. N.), 261
Peress, N. S., Medeiros-Roxburgh, V. A. and Gelfand, M. C., Ontogeny and localization of the IgG Fc receptor of rabbit ciliary processes, 325
Piatigorsky, J. (see Tréton, J. A.), 513
Polak, J. (see Zhang, S. Q.), 365
Pourcho, R. G., Goebel, D. J. and McReynolds, J. S., Autoradiographic studies of [^{3}H]-glycine, [^{3}H]-GABA, and [^{3}H]-muscimol uptake in the mudpuppy retina, 69
Pynsent, P. B. (see Davies, P. D.), 605

Ragatzki, P. A. (see Giblin, F. J.), 9
Rao, G. N. and Cotlier, E., Urea cycle enzymes in retina, ciliary body-iris, lens and senile cataracts, 483
Raviola, G. (see Butler, J. M.), 709
Reddy, V. N. (see Giblin, F. J.), 9
Reddy, V. N. (see Nishio, I.), 61
Riley, M. V., A role for glutathione and glutathione reductase in control of corneal hydration, 751
Rogers, J. M. and Grabowski, C. T., Postnatal mirex cataractogenesis in rats: lens cation balance, growth and histology, 563
Rosenbaum, J. T. (see Cousins, S. W.), 665
Rumley, A. G. (see Trope, G. E.), 247
Ruskell, G. L. (see Butler, J. M.), 523

Saltza, I. von (see Cheng, H-M.), 355
Santiago, M. A. (see Dillon, J.), 95
Sanyal, S. and Zeilmaker, G. H., Development and degeneration of retina in *rds* mutants mice: light and electron microscopic observations in experimental chimaeras, 231
Schechter, C. (see Clark, V. M.), 611
Schleich, T., Willis, J. A. and Matson, G. B., Longitudinal (T_1) relaxation times of phosphorus metabolites in the bovine and rabbit lens, 455
Schmidt, M. L. (see Stone, R. A.), 387
Schubert, H. D., Denlinger, J. L. and Balazs, E. A., Exogenous Na-hyaluronate in the anterior chamber of the owl monkey and its effect on the intraocular pressure, 137
Sears, M. (see Caprioli, J.), 1, 47
Sears, M. (see Caprioli, J.), 47
Shand, J. (see Lythgoe, J. N.), 629
Sherrard, E. S., Interpretation of some specular microscopical images of insulted corneal endothelium by scanning electron microscopy, 685
Sillman, A. J., Bolnick, D. A., Bosettii, J. B., Haynes, L. W. and Walter, A. E., The effect of lead on photoreceptor response amplitude – influence of the light stimulus, 183
Sorgente, N. (see Hentzen, P. C.), 51
Spector, A. (see Bhat, S. P.), 317
Spector, A. (see Dillon, J.), 95
Spector, A. (see Sredy, J.), 479, 653
Sperber, G. O. and Bill, A., A method for near-continuous determination of aqueous humor flow; effects of anaesthetics, temperature and indomethacin, 435

Sredy, J. and Spector, A., Phosphorylation of H_2O_2-treated lens Na^+,K^+-ATPase, 479
Sredy, J. and Spector, A., The phosphorylation of bovine and human lens polypeptides, 653
Srivastiva, S. K. (see Cheng, H-M.), 355
Stewart, A. and Augusteyn, R. C., Pyridine nucleotides in normal and cataractous human lenses, 307
Stone, R. A., Kuwayama, Y., Laties, A. M., McGlinn, A. M. and Schmidt, M. L., Guinea-pig ocular nerves contain a peptide of the cholecystokinin/gastrin family, 387
Summer, K-H. (see Graw, J.), 37

Tabor, G. A. (see Fliesler, S. J.), 153
Takamatsu, T. (see Ikebe, H.), 497
Tanaka, T. (see Nishio, I.), 61
Taubman, M. A. (see Gudmundsson, O. G.), 575
Terenghi, G. (see Zhang, S. Q.), 365
Terubayashi, H., Murabe, Y., Fujisawa, H., Itoi, M. and Ibata, Y., Enzymhistochemical identification of microglial cells in the rat retina: light and electron microscopic studies, 595
Tighe, J. (see Unger, W. G.), 677
Tréton, J. A., Jones, R. E., King, C. R. and Piatigorsky, J., Evidence against γ-crystallin DNA or RNA sequences in the chicken, 513
Tripathi, B. J. and Tripathi, R. C., Effect of epinephrine in vitro on the morphology, phagocytosis, and mitotic activity of human trabecular endothelium, 731
Tripathi, R. C. (see Tripathi, B. J.), 731
Trope, G. E. and Rumley, A. G., Catecholamine concentrations in tears, 247
Tso, M. O. M. (see Fei, P. F.), 583

Ulshafer, R. J., Allen, C., Dawson, W. W. and Wolf, E. D., Hereditary retinal degeneration in the Rhode Island Red chicken. I. Histology and ERG, 125
Unger, W. G. and Tighe, J., The Response of the Isolated Iris Sphincter Muscle of Various Mammalian Species to Substance P, 677
Unger, W. G. (see Butler, J. M.), 523
Unger, W. G. (see Zhang, S. Q.), 365

Vesely, S. (see Keeley, F. W.), 533

Wagner, B. J. (see Fleshman, K. R.), 543
Walter, A. E. (see Sillman, A. J.), 183
Walton, J. and McAvoy, J., Sequential structural response of lens epithelium to retina-conditioned medium, 217
Wang, Q. (see Grierson, I.), 505
Waring, G. O., III (see Kenney, M. C.), 267
Weiss, J. N. (see Nichio, I.), 61
Wells, P. A. and Hazlett, L. D., Complex carbohydrates at the ocular surface of the mouse: an ultrastructural and cytochemical analysis, 19
Willekens, B. W. (see Koksma, J. M. A.), 195
Williams, R. N. and Bhattacherjee, P., Inhibition of the acute ocular responses to nitrogen mustard by colchicine, 721
Williams, R. N., Paterson, C. A., Eakins, K. E. and Bhattacherjee, P., Ascorbic acid inhibits the activity of polymorphonuclear leukocytes in inflamed ocular tissues, 261
Williams, R. N. (see Paterson, C. A.), 701
Willis, J. A. (see Schleich, T.), 455
Wolf, E. D. (see Ulshafer, R. J.), 125

Yue, B. Y. J. T. (see Fei, P. F.), 583

Zeilmaker, G. H. (see Sanyal, S.), 231
Zhang, S. Q., Terenghi, G., Unger, W. G., Ennis, K. W. and Polak, J., Changes in Substance P- and Neuropeptide Y-Immunoreactive Fibres in Rat and Guinea-pig Irides Following Unilateral Sympathectomy, 365
Zhang, S. Q. (see Butler, J. M.), 523

SUBJECT INDEX

A23187, 107
Acetazolamide, 47
Actin, 279
Active water flux, 335
Adenylate cyclase, 745
Adrenoceptors, 731, 781
Aging, 543
Alanine, 113
Aldose reductase inhibitor, 553
Alkali burn, 701
Amino acid, 113
Ammonia, 113
Anterior chamber, 137
Anterior segment, 401
Anterior uvea, 365
Aotus trivirgatus, 137
Aphakia, 1
Aqueous flow, 745, 791
Aqueous humor, 47, 137, 261, 605, 807
Aqueous humor flow, 435
Aqueous outflow, 709
Arginase, 483
Argininosuccinase, 483
Argininosuccinate synthetase, 483
Ascorbic acid, 261
Aspartate, 113
Autoradiography, 69
Axon reflex, 807

Basement membrane, 583
BCNU, 751
Beta blockers, 731
Blood vessels, 401
Blood/aqueous barrier, 721, 807
Blood–ocular barriers, 401
Bovine cornea, 639
Bovine lens, 455, 479, 653

Calcium, 9, 107
Calcium-induced cataract, 9
Calcium ions, 731
Calf, 483
Cannabigerol, 251
Cannabinoids, 251
Carbohydrate cytochemistry, 19
Cannabinol, 251
Cataract, 9, 61, 343, 563, 653, 759
Catecholamines, 247
Cats, 251, 677
cDNA, 513
CDNB treatment, 355
Cell contraction, 731
Cell culture, 469
Cell degeneration, 731
Cell lines, 207
Cell migration, 217
Cell proliferation, 469
Cell surface proteins, 611
Chick embryonic lens proteins, 415
Chicken, 125, 513
Chicken embryos, 401
Chimaera, 231
Cholecystokinin/gastrin peptide, 387
Chondroitin sulfate, 583
Chromatography, 469
Ciliary body, 771
Ciliary body-iris, 483
Ciliary processes, 325
Circadian rhythm, 791
Collagen, 267, 533, 639
Collagen antibodies, 639
Colchicine, 721
Computed tomography, 709
Concentrations, 393
Cones, 183, 629
Conjunctiva, 19
Conjunctival hyperemia, 807
Contrast medium, 709
Cornea, 19, 267, 685, 701
Corneal endothelium, 335, 497, 751
Corneal grafts, 393
Corneal physiology, 247
Cortex fibre cell bundles, 195
Cow, 677
Crayfish, 279
Crystallin, 9, 37
Crystallin genes, 513
Crystallin synthesis, 83
δ-Crystallin microheterogeneity, 415
γ-Crystallin, 317, 513
Cultured cells, 217
Cyclic AMP, 653, 745, 731
Cyproheptadine, 665
Cytoskeleton, 279
Cytotoxicity, 393

Dark damage, 629
Degeneration, 231
Descemet's membrane, 267, 639
Detergent extraction, 611
Development, 401
Dextran, 791
Diabetes, 605
Differentiation, 217, 415
Dipivefrin, 791
Disc membranes, 629

Diurnal variations, 175
DNA cytofluorometry, 497
DNA synthesis, 497
Dog, 677
Dolichol, 153
Donor, 393
Dopamine, 247
Dopamine β-hydroxylase, 207, 365

Electrical potential, 771
Electrical resistance, 771
Electron microscopy, 19, 583, 595
EM autoradiography, 611
Endogenous, 299
Endopeptidase, 543
Endothelial nuclei, 506
Endothelium, 685
Endotoxin, 665
Enhancement by light, 183
Epinephrine, 1, 247
Episcleral venous pressure, 807
Epithelium, 415
Erythro-α-methylnorepinephrine, 781
Evolution, 513
Explant, 217
Extracellular matrix, 61
Eye, 401, 807
Eye pressure, 47

Facial nerve, 523
Facility, 745
Fetal cornea, 639
Fibre cell differentiation, 83
Fibres, 415
Fibrin, 267
FITC dextran, 791
Fluorometry, 791
Formaldehyde, 712
Forskolin, 47, 745
Frog, 183
Fuchs' dystrophy, 267

GABA, 69, 299
Gas chromatography, 113
Gene expression, 231
Germ-free, 575
Giant vacuoles, 505
Glaucoma, 1, 47, 731
Glial, 207
Glial fibrillary acid protein, 207
Glucose, 605
Glutamate, 113
Glutaminase, 113
Glutamine, 113
Glutathione, 37, 355, 751
Glutathione reductase, 307, 343, 751
Glycine, 69, 113
Glycolysis, 355
Glycolytic enzymes, 37
Glycoprotein synthesis, 153
Glycoproteins, 279
Glycosaminoglycans, 373
Guinea-pig, 365, 387

Healon^{R}, 137
Heavy metal, 183
Hereditary cataract, 37
Hereditary retinal degeneration, 125
Hexose monophosphate shunt, 355
High molecular weight proteins, 9
Horseradish peroxidase, 401
Human, 483
Human corneal endothelium, 497
Human lens, 307, 343, 653
Hyalocytes, 373
Hyaluronic acid, 137
Hyaluronidase, 373
Hydrogen peroxide, 479, 751, 759
3-Hydroxykynurenine, 95

IgA, 575
Immune complexes, 325
Immunoassay, 51
Immunoglobulin receptors, 325
Immunohistochemistry, 207
In vitro, 393
In vitro synthesis, 317
In vivo, 393
Indomethacin, 435, 665
Inflammation, 261, 701, 791, 807
Injury response, 365, 677
Intraocular dynamics, 791
Intraocular pressure, 137, 175, 247, 251, 435, 721, 731, 745, 781
Intravenous injection, 393
Iris sphincter, 677
Irritation, 807

Junctions, 217

Ketamine, 435, 791

Lacrimal gland, 575
Lacrimal secretion, 247
Lanthanum, 107
Laser light-scattering spectroscopy, 61
Lead, 183
Lens, 9, 37, 51, 83, 107, 113, 479, 483, 513, 543, 553, 605
Lens bow region, 195
Lens cation balance, 563
Lens epithelial cell, 83
Lens epithelium, 217
Lens fibres, 217
Lens growth, 563
Light microscopy, 195, 595

Lipid peroxidation, 759
Lipopolysaccharide, 665
Longitudinal relaxation time, 455

Main intrinsic protein, 51
Mammals, 807
Man, 677
Mass spectrometry, 113
Maturation, 325
Membrane, 279
Membrane-bound mRNA, 51
Messenger RNA, 51
Metabolism, 113
Metabolite levels, 455
Metrizamide, 709
Mice, 513
Microfilaments, 217
Microglial cell, 595
Microspheres, 1
Microvilli, 279
Miosis, 677, 807
Mirex, 563
Mixed disulphides, 343
Monkey, 677
Monkey eye, 709
Monovalent ions, 653
Mouse, 37, 231
MP26 antisera, 51
MP26 dimer, 51
MP26 monomer, 51
MP26 tetramer, 51
Mudpuppy, 69
Muscimol, 69
Mutant genes, *rds*, 231
Myeloperoxidase, 261, 701

Neon tetra, 620
Neural retina, 83
Neurogenic inflammation, 721
Neuronal, 207
Neuropeptide, Y, 365
Neurotoxicity, 251
Neurotransmitter, 299
NIF-NaHA, 137
Nitrogen mustard, 721
NMR, 455, 553
Non-conventional pathway, 709
Norepinephrine, 247, 781
Noval environment, 175
Nuclear cataract, 37
Nuclear magnetic resonance spectroscopy, 455, 553
Nucleoli, 217

Ocular blood flow, 1
Ocular inflammation, 759
Ocular mucus, 19
Ocular nerves, 387
Ocular tissues, 393
Ocular toxicity, 251
Ontogany, 325
Optic nerve, 401
Outer segments, 231
Owl monkey, 137
Oxindolyl alanine, 95

Paracentesis, 807
Pararosaniline-Feulgen reaction, 497
Passive water flux, 335
Penetrance, 37
Pentobarbital, 435
Peptide, cholecystokinin/gastrin, 387
Perinatal, 325
Pesticides, 563
Phenylephrine, 791
Phosphate metabolism, 553
Phosphorus metabolites, 455
^{31}P-NMR, 455, 553
Photo-oxidation, 95
Photoreceptor, 125, 153, 231, 279
Photoreceptor response, 183
Pig, 677
Pigment epithelium, 231
Polyacrylamide gel electrophoresis, 9
Polymorphonuclear leukocyte, 261, 701
Polyploidization, 497
Precorneal tear film, 19
Prelabeled, 299
Prenatal dexamethasone, 195
Primates, 807
Proline, 113
Properties, 343
Prostaglandins, 665, 731, 807
Protein, 807
Protein aggregation, 9
Protein diffusively, 61
Protein modification, 95
Protein phosphorylation, 653
Pterygopalatine ganglion, 523
Pupil dilation, 781
Purification, 343
Pyridine nucleotides, 307

Rabbit, 175, 483, 583, 677, 781, 791
Rabbit ciliary body, 771
Rabbit eyes, 47, 523
Rabbit lens, 455
Rat pigment epithelial cells, 611
Rats, 251, 365, 453, 595, 665
rd, 231
Recipient, 393
Redox state, 751
Release, 299
Retina, 69, 125, 153, 183, 231, 299, 483, 595
Retinal degeneration, 759
Retinal extract, 469

Retinoblastoma, 207
Rhabdom, 279
Rods, 183
^{86}Rb uptake and afflux, 355

Scanning electron microscopy, 685
Schlemm's canal, 505, 807
Sclera, 533
SDS-polyacrylamide gel electrophoresis, 317
Seasonal variations, 175
Secretory immunity, 575
Senile cataracts, 95, 307
Serine, 113
Serotonin, 665
Serum, 469
S-methyl glutathione, 751
Sodium, 605
Sodium citrate, 701
Sodium hyaluronate, 137
Sodium salicylate, 393
Na^+,K^+-ATPase, 479
Sorbitol pathway, 553
Specular microscopy, 685
Spin lattice relaxation time, 455
Spontaneous dominant mutation, 37
Stable isotope, 113
Stroma, 639
Strontium, 107
Subcellular fractionation, 611
Substance P, 365, 523, 677
Superior cervical ganglion, 365
Superoxide radical, 759
Surface coil, 455
Sympathectomy, 365

T_1, 455
T_1 discrimination, 455
Tears, 247, 575
Temperature, 435
Teratogenic lens deviations, 195
Tetanus toxin, 207
Tissue culture, 731
Tissue fluid pressure, 336
Tissue hydration, 751
TPPase, 595
Trabecular meshwork, 583, 731, 807
Tunicamycin, 153

Ultrastructure, 217
Urea cycle enzymes, 483
Urethane, 435
Uveal tract, 325
Uveitis, 665

Vascular endothelial cells, 469
Vascular permeability, 665
Vasocative intestinal polypeptide (VIP), 523
Viscosurgery, 137
Visual pigments, 629
Vitreous, 373
Vitreous humor, 791

Western blot, 51
Whole mount iris, 365

X-irradiation, 61, 791